UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,894	12/16/2003	Jung-hoe Kim	1901.1345	5705

21171 7590 09/30/2009

STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER	
GODBOLD, DOUGLAS	

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
09/30/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/735,894	KIM ET AL.	
	Examiner	Art Unit	
	DOUGLAS C. GODBOLD	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 07 July 2009.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-3,6,9 and 12-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3,6,9 and 12-15 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 20090202, 20090713.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to correspondence filed July 7, 2009 in reference to application 10/735,894. Claims 1-3, 6, 9, and 12-15 are pending and have been examined.

Information Disclosure Statement

2. The Information Disclosure Statement filed July 13, 2009 has been accepted and considered in this office action. The information disclosure statement filed February 2, 2009 has been reconsidered as well.

Response to Amendment

3. The amendment filed July 7, 2009 has been accepted and considered in this office action. Claims 1, 6, 9, and 12 have been amended, and claims 5, 7, 8, 10, 11, 16, and 17 have been cancelled.

Response to Arguments

4. Applicant's arguments filed July 7, 2009 have been fully considered but they are not persuasive.

5. Regarding applicant's arguments, see remarks pages 8 and 9 (and repeated 10 and 11), that Park fails to teach coding the sample in into of symbols *in consideration of a bit range allowed in each of the plurality of layers*, the examiner disagrees. Park

teaches this in several locations. First, column 4, lines 33-35 teaches packing the bits according to significance, in a predetermined number. Column 9 lines 4-59 discuss that each of the layers have a different bit rates, and the bits are packed in a way to fit within this bit rate. Line 59 specifically refers to a "bit quality allowance" which can be fairly read on "bit range" required by the claims in the present application. Therefore Park teaches *in consideration of a bit range allowed in each of the plurality of layers.*

6. Regarding applicants arguments, see Remarks page 8, that symbols of Park are different than the symbols in the present invention because the present invention all come form the same significances, the examiner disagrees. Park determines its symbols with bits from the same significance as well, see column 7 line 49- column 8 line 11. The bits are grouped into 4 bits, to make a symbol, starting with the MSBs first. by illustration, 1010 is the fist symbol coded, and all the bits are from the same significance. Therefore the Park teaches the symbols as claimed.

Claim Rejections - 35 USC § 102

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 6 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Park (US Patent 6,438,525).

9. Consider 6, Park teaches a method for decoding audio data that is coded in a layered structure, with scalability, comprising:

using a processor for:

inputting audio signal and extracting audio data from said audio signal (figure 4, audio data input);

differential-decoding additional information containing scale factor information and coding model information corresponding to a first layer (Col. 4, lines 37-48, wherein the quantization step size information is the scale factor information, and the quantization bit information is the coding model information. Also Col. 3, lines 18-21, describe the order of creation of the layers.);

Huffman-decoding audio data in units of symbols in order from a symbol' formed with MSB bits down to a symbol formed with LSB bits and obtaining quantized samples by referring to the coding model information (Col. 4, lines 37- 48 and 64-65, wherein the symbols are represented by bits (Col. 4, lines 49-50).);

inversely quantizing the obtained quantized samples by referring to the scale factor information (inverse quantizing portion 410 from Fig. 4 and Col. 13, lines 5-7);

inversely MDCT transforming the inversely quantized samples (frequency/time mapping portion 420 from Fig. 4 and Col. 13, lines 7-10. Note that Park does not specifically mention using the inverse MDCT in transforming the signal from frequency to the temporal domain, however it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the same process for decoding as for encoding but inversely, in which case the inventor used the MDCT

transform for the time/frequency mapping portion for converting the data from the temporal domain into the frequency domain (Col. 10, lines 62-65, and Col. 13, lines 34-38).); and

repeatedly performing the steps with increasing the ordinal number of the layer one by one every time, until decoding for a predetermined plurality of layers is finished (Col. 13, lines 31-34),

wherein the Huffman-decoding of audio data comprises:

decoding audio data in units of symbols in consideration of bit range allowed in a plurality of layers corresponding to the audio data, in order from a symbol formed with MSB bits down to a symbol formed with LSB bits (Col. 13, lines 14-30, wherein the units of symbols are represented by bits. Column 9 lines 4-59 discuss that each of the layers have a different bit rates, and the bits are packed in a way to fit within this bit rate. Line 59 specifically refers to a "bit quality allowance"); and

obtaining quantized samples from a bit plane on which decoded symbols are arranged (Col. 13, lines 18-20, wherein Col. 7, lines 50-65 illustrate the arrangement of bits or bit plane used for the encoding, and Col. 8, lines 2-11 describe the arrangement of the bit patterns (symbols) for encoding.),

wherein in decoding audio data, a 4*K bit plane formed with decoded symbols is obtained, and in obtaining quantized samples, K quantized samples are obtained from the 4*K bit plane, where K is an integer (Col. 13, lines 18-20, wherein Col. 7, lines 50-65 illustrate the arrangement of bits or bit plane (4*K) used for the encoding. For this

example bit plane, the number of quantized samples (K) is 8, and the symbols are represented as bits.).

10. Consider claim 9, Park teaches an apparatus for decoding audio data that is coded in a layered structure, with scalability, comprising:

an unpacking unit which decodes additional information containing scale factor information and coding model information corresponding to a first layer, and by referring to the coding model information, Huffman-decodes audio data in units of symbols in order from a symbol formed with MSB bits down to a symbol formed with LSB bits and obtaining quantized samples (bitstream analyzing portion 400 from Fig. 4, and Col. 4, lines 37-50 and lines 64-65, wherein the quantization step size information is the scale factor information, and the quantization bit information is the coding model information, also the units of symbols are represented by bits.);

an inverse quantization unit which inversely quantizes the obtained quantized samples by referring to the scale factor information (inverse quantizing portion 410 from Fig. 4, and Col. 4, lines 37-48); and

an inverse transformation unit which inverse-transforms the inversely quantized samples (frequency/time mapping portion 420 from Fig. 4, and Col. 4, lines 37-48),

wherein the unpacking unit decodes audio data in units of symbols in consideration of a bit range allowed in each of the plurality of layers corresponding to the audio data, in order from a symbol formed with MSB bits down to a symbol formed with LSB bits, and obtains quantized samples from a bit plane on which decoded

symbols are arranged (Col. 12 line 67 to Col. 13 line 5, and Col. 13, lines 11- 20, wherein the units of symbols are the bitstreams which are composed of the bit sequences obtained from the bit plane as shown in Col. 7, lines 51-65. Column 9 lines 4-59 discuss that each of the layers have a different bit rates, and the bits are packed in a way to fit within this bit rate. Line 59 specifically refers to a "bit quality allowance"), and

wherein the unpacking unit obtains a 4*K bit plane formed with decoded symbols and then, obtains K quantized samples from the 4*K bit plane, where K is an integer (Col. 7, lines 49-65, 4*8 bit plane).

Claim Rejections - 35 USC § 103

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. Claims 1-3, and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US Patent 6,438,525) in view of Andrew et al. (US 2002/0131084).

13. Consider claim 1, Park teaches a coding method comprising:

Using at least one processor for:

inputting audio signal and extracting audio data from said audio signal (figure 2, PCM audio data input);

slicing the audio data so that sliced audio data corresponds to a plurality of layers (Col. 6, lines 6-12);

obtaining scale band information and coding band information corresponding to each of the plurality of layers (Col. 6, lines 1-6 and Col. 3, lines 39-42, wherein the quantization step size information is the scale factor information, and the quantization bit information is the coding model information);

coding additional information containing scale factor information and coding model information based on scale band information and coding band information corresponding to a first layer (Col. 6, lines 1-6 and Col. 3, lines 39-42, wherein the quantization step size information is the scale factor information, and the quantization bit information is the coding model information);

obtaining quantized samples by quantizing audio data corresponding to the first layer with reference to the scale factor information (Col. 12, lines 15-19~ wherein the step size information is the scale factor information, and Col. 6, lines 21-36);

Huffman-coding the obtained plurality of quantized samples in units of symbols in order from a symbol formed with most significant bits (MSB) down to a symbol formed with least significant bits (LSB) by referring to the coding model information (Col. 6, lines 1-12, wherein the units of symbols are represented by the bit sequences, also Col. 11, lines 3-14 and Col. 3, lines 46-48); and

repeatedly performing the steps with increasing the ordinal number of the layer one by one every time, until coding for the plurality of layers is finished (Col. 6, lines 1-6),

wherein the Huffman-coding of the plurality of quantized samples comprises: mapping a plurality of quantized samples on a bit plane (Col. 7, lines 51- 65 show the 4*8 bit plane of quantized samples); and

coding the samples in units of symbols in consideration of a bit range allowed in each of the plurality of layers corresponding to the samples in order from a symbol formed with MSB bits down to a symbol formed with LSB bits (Col. 8, lines 2-11, wherein the units of symbols are represented by the bit sequences. Column 9 lines 4-59 discuss that each of the layers have a different bit rates, and the bits are packed in a way to fit within this bit rate. Line 59 specifically refers to a “bit quality allowance”).

wherein in the mapping of the plurality of quantized samples, K quantized samples are mapped on a bit plane and Huffman coding is performed by referring to the K-bit binary data where K is an integer (Col. 7, line 49 to Col. 8, line 11).

Park does not specifically mention obtaining a scalar value corresponding to the symbol formed with K-bit binary data, and then performing Huffman coding by referring to the obtained scalar value and a scalar value corresponding to a symbol higher than a current symbol on the bit plane.

Conversely, Andrew et al. teach obtaining a scalar value corresponding to the-symbol formed with K-bit binary data, and then performing Huffman coding by referring to the obtained scalar value and a scalar value corresponding to a symbol higher than a current symbol on the bit plane (See Paragraph [0080], "The Huffman decoders are staggered so that a Huffman decoder decoding bits at a lower bit plane has available the necessary information from higher bit planes (decoded from a Huffman decoder) to

decode each coefficient in the scan," wherein the scalar values are represented by the "necessary information" and the symbols are represented by bits. It is noted that even though Andrew's decoder is the one having available the "necessary information from higher bit planes" it would have been obvious to a person having ordinary skill in the art at the time of the invention that since the "necessary information" is decoded from a Huffman decoder, that information had to be available as well in the coding process for it to be able to be decoded or used by the decoder. Also, even though Andrew only mentions the "necessary information from higher bit planes," it would have been obvious to one having ordinary skill in the art at the time of the invention that in order for the "necessary information" from a higher bit plane to be available, the current "necessary information" (or current scalar value) for that higher bit plane had to also be available during the coding process.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of obtaining a scalar value corresponding to the symbol formed with K-bit binary data, and then performing Huffman coding by referring to the obtained scalar value and a scalar value corresponding to a symbol higher than a current symbol on the bit plane as taught by Andrew et al. for Park's method in order to provide more parameters or necessary information from current or higher bit planes in order to obtain specific coding values and also to have that necessary information available to a decoder in order to obtain the quantized binary values.

14. Consider claim 2, Park teaches the method of claim 1, further comprising, before the coding of additional information,

obtaining a bit range allowed in each of the plurality of layers, wherein in the coding of the obtained plurality of quantized samples, the number of coded bits is counted, and if the number of counted bits exceeds a bit range corresponding to the bits, coding is stopped, and if the number of counted bits is less than the bit range corresponding to the bits even after quantized samples are all coded, bits that remain not coded after coding in a lower layer is finished are coded to the extent that the bit range permits (Steps (b) and (c) from Col. 3, lines 18-35,'wherein the predetermined layer size is the allowed bit range per layer.).

15. Consider claim 3, Park teaches the method of claim 1, wherein the slicing of audio data comprises:

performing a wavelet transform of audio data (time/frequency mapping portion 200 from Fig. 2 and Col. 5, lines 4!-43); and

slicing the wavelet-transformed data by referring to a cut-off frequency so that the sliced data corresponds to the plurality of layers (Col. 6, lines 6-12).

16. Consider claim 12, Park teaches an apparatus for coding audio data with scalability comprising:

a transformation unit which MDCT transforms the audio data (time/frequency mapping portion 200 from Fig. 2, and Col. 6, lines 23-26);

a quantization unit which quantizes the MDCT-transformed audio data corresponding to each layer, by referring to the scale factor information, and outputs quantized samples (quantizing portion 220 from Fig. 2, and Col. 6, lines 30-37, wherein the scale factor information is the quantization step size.); and

a packing unit which differential-codes additional information containing scale factor information and coding model information corresponding to each layer, and Huffman-codes the plurality of quantized samples from the quantization unit, in units of symbols in order from a symbol formed with most significant bits (MSB) down to a symbol formed with least significant bits (LSB) by referring to the coding model information (bit packing portion 240 from Fig. 2, Col. 6, lines 1-12, Col. 3, lines 39-42, and Col. 3, lines 46-48, wherein the quantization step size information is the scale factor information, and the quantization bit information is the coding model information. Also the symbols are represented by the bit sequences of the bit-plane (Col. 7, lines 50-65).),

wherein the wherein the packing unit maps K quantized samples on a bit plane, and codes the samples in units of symbols in consideration of a bit range allowed in a plurality of layers corresponding to the samples, in order from a symbol formed with MSB bits down to a symbol formed with LSB bits (Col. 6, lines 1-12, wherein the bit sequences are the symbols. An example of a bit plane used for the coding is shown, in Col. 7, lines 51-65.),and then performs Huffman-coding by referring to the K-bit binary data where K is an integer (Col. 7, line 49 to Col. 8, line 11. Column 9 lines 4-59 discuss that each of the layers have a different bit rates, and the bits are packed in a way to fit within this bit rate. Line 59 specifically refers to a "bit quality allowance").

However, Park does not specifically mention obtaining a scalar value corresponding to the symbol formed with K-bit binary data, and then performing Huffman coding by referring to the obtained scalar value and a scalar value corresponding to a symbol higher than a current symbol on the bit plane.

Conversely, Andrew et al. teach obtaining a scalar value corresponding to the symbol formed with K-bit binary data, and then performing Huffman coding by referring to the obtained scalar value and a scalar value corresponding to a symbol higher than a current symbol on the bit plane (See Paragraph [0080], "The Huffman decoders are staggered so that a Huffman decoder decoding bits at a lower bit plane has available the necessary information from higher bit planes (decoded from a Huffman decoder) to decode each coefficient in the scan," wherein the scalar values are represented by the "necessary information" and the symbols are represented by bits. It is noted that even though Andrew's decoder is the one having available the "necessary information from higher bit planes" it would have been obvious to a person having ordinary skill in the art at the time of the invention that since the "necessary information" is decoded from a Huffman decoder, that information had to be available as well in the coding process for it to be able to be decoded or used by the decoder. Also, even though Andrew only mentions the "necessary information from higher bit planes," it would have been obvious to one having ordinary skill in the art at the time of the invention that in order for the "necessary information" from a higher bit plane to be available, the current "necessary information" (or current scalar value) for that higher bit plane had to also be available during the coding process.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of obtaining a scalar value corresponding to the symbol formed with K-bit binary data, and then performing Huffman coding by referring to the obtained scalar value and a scalar value corresponding to a symbol higher than a current symbol on the bit plane as taught by Andrew et al. for Park's apparatus in order to provide more parameters or necessary information from current or higher bit planes in order to obtain specific coding values and also to have that necessary information available to a decoder in order to obtain the quantized binary values.

17. Consider claim 13, Park teaches the apparatus according to claim 12, wherein the packing unit obtains scale band information and coding band information corresponding to each of the plurality of layers, and codes additional information containing scale factor information and coding model information based on scale band information and coding band information corresponding to each layer (Col. 6, lines 1-6 and Col. 3, lines 39-42, wherein the quantization step size information is the scale factor information, and the quantization bit information is the coding model information.).

18. Consider claim 14, Park teaches the apparatus according to claim 12, wherein the packing unit counts the number of coded bits and if the number of counted bits exceeds a bit range corresponding to the bits, stops the coding, and if the number of counted bits is less than the bit range corresponding to the bits even after quantized

samples are all coded, codes bits that remain not coded after coding in a lower layer is finished, to the extent that the bit range permits (Col. 6, lines 1-6, and steps (b) and (c) from Col. 3, lines 18-30).

19. Consider claim 15, Park teaches the apparatus according to claim 12, wherein the packing unit slices the MDCT-transformed data by referring to a cut\- off frequency so that the sliced data corresponds to the plurality of layers (Col. 6, lines 1-12 and Col. 6, lines 24-27).

Conclusion

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS C. GODBOLD whose telephone number is (571)270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DCG

/Richemond Dorvil/
Supervisory Patent Examiner, Art Unit 2626